

Notice of Allowability

Application No.

09/852,102

Examiner

Jeffrey R. West

Applicant(s)

ERYUREK ET AL.

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE filed September 23, 2004.
2. ☒ The allowed claim(s) is/are 1-10, 12-28 and 30-42.
3. ☒ The drawings filed on 28 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 9/23/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. David Bohn on June 10, 2004.

3. The application has been amended as follows:

In claim 1, line 21, "the historical data" has been changed to ---the set of historical pressure data---.

In claim 1, line 23, "the current data" has been changed to ---the current pressure data set---.

In claim 1, line 27, "the historical pressure data" has been changed to ---the set of historical pressure data---.

In claim 1, line 28, "changes in the condition" has been changed to ---changes in a condition---.

In claim 21, line 2, "primary flow element" has been changed to ---primary flow sensing element---.

In claim 25, line 3, "first difference algorithm" has been changed to ---first algorithm---.

In claim 26, line 4, "neural networks, statistical analysis" has been changed to ---neural networks, and statistical analysis---.

In claim 27, line 3, "differencing algorithm" has been changed to ---algorithm---.

In claim 34, line 2, "baseline primary" has been changed to ---primary---.

In claim 35, line 2, "baseline impulse piping comprises new impulse piping" has been changed to ---impulse lines comprises new impulse lines---.

Allowable Subject Matter

4. Claims 1-10, 12-28, and 30-42 are considered to be allowable over the cited prior art for the following reasons.

U.S. Patent No. 5,680,109 to Lowe et al. discloses a system and method for the detection of blockages in the impulse lines of a differential pressure sensor, coupled to a fluid or gas to be measured by the impulse lines (column 1, lines 13-19), comprising at least one absolute pressure sensor coupled to at least one impulse line (column 2, lines 58-61) which transmits pressure data to an A/D converter to sample/digitize the pressure data (column 3, lines 45-47). Lowe then discloses a control system including a CPU and memory for storing the diagnostic program algorithms on a computer readable medium (column 5, lines 45-57) that receives the real-time pressure data in a monitoring mode, represents the pressure data as statistical noise variance, and calculates a difference between a current sample set

and an expected threshold (column 5, lines 17-21), to determine a sufficient change which indicates impulse line blockage (column 4, lines 29-43 and column 5, lines 21-26). Lowe discloses specifying that the pressure/diagnostic result indicates the blocked condition of the impulse lines based on the condition of a flow device, such as a pump or orifice plate (column 4, lines 35-43) for display to the user for diagnostic reporting (column 5, lines 59-62).

U.S. Patent No. 5,340,271 to Freeman et al. teaches a flow control method and means that detects variances above a predetermined variation limit to determine improper flow (column 2, lines 18-20) wherein the variance is determined by comparing the instantaneous data to a moving average of previously determined data that is then compared to a preset level (column 10, lines 56-66).

U.S. Patent No. 5,710,370 to Shanahan et al. teaches a method for calibrating a differential pressure fluid flow measuring system using one of a plurality of primary differential pressure flow sensors, including an averaging pitot tube, orifice plate, venturi tube, or flow nozzle (column 5, lines 35-47), wherein an initial linearization training process characterizes/calibrates the device using historical/baseline data (column 6, lines 34-61) and subsequently measuring actual differential pressure data (column 7, lines 21-26). Shanahan then teaches comparing the historical/baseline calibration data to the average measured data, using statistical analysis, in order to determine incorrect out of calibration operation of the primary device and obtain a correction value for the operating values of the device (column 7, lines 27-47).

While the inventions of Lowe, Freeman, and Shanahan teach many of the features of the claimed invention, none of the references teach or suggest, in combination with the other claimed limitations for a flow diagnostic system, calculating a difference between pressure data and a moving average of the pressure data, wherein the moving average is based upon weighted pressure data, and receiving the difference and calculating a trained data set of historical pressure data during a training mode and calculating a current pressure data set during a monitoring mode, wherein the set of historical pressure data comprises statistical data as a function of the difference and the current pressure data set comprises statistical data calculated as a function of the difference.

Further still, while the invention of Freeman does teach determining a difference between a current signal and a moving average, this difference is used as the deviation discrimination technique and is not used as an input to a separate deviation discrimination technique. Therefore, the modification of Lowe with Freeman would modify the discrimination technique of Lowe and the combination would fail to meet the invention as claimed in independent claims 1 and 28.

5. Also noted is newly cited U.S. Patent No. 5,347,843 to Orr et al. which teaches a differential pressure flowmeter with enhanced signal processing for respiratory flow measurement including means for performing baseline adjustment using an average of pressure data and JP Patent No. 06-089482 which teaches a choking-diagnostic

device for pressure leading pipe in a pressure measuring device that uses a moving average to equalize a difference signal.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jrw
November 14, 2004


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